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Project: Outcomes after total joint replacement and the role of rehabilitation

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Introduction:
Total joint replacement (TJR) is a common surgery for degenerative joint diseases such as osteoarthritis (OA), where the arthritic and damaged joint is replaced with a prosthetic. The prevalence of TJR procedures registered by the NZ Joint Registry (NZJR) in New Zealand is increasing where more than 14,000 knee and hip replacements are performed each year. Prospective observational studies give insight into the course of 'typical' recovery trajectories for knee and hip replacement patients. The greatest functional recovery is seen in the first 6 months after total hip replacement (THR) and within 12 months after total knee replacement (TKR).

Postoperative outcomes generally favour pain reduction, physical improvement and increased health-related quality of life (HRQoL), although as much as 25% of patients may report no improvements with ongoing pain and functional limitations. Patients with preoperative pain, greater comorbid conditions and poor functional status appear at greater risk for inferior postoperative outcomes. The goal of rehabilitation is to enable joint replacement patients to achieve and maintain optimal physical and psychological function by limiting disability. Pre-operative rehabilitation allows patients to prepare for surgery through education and to introduce appropriate exercise behaviours following TJR.

Intraoperative care is initiated the day following surgery and postoperative rehabilitation (often exercise based) commences once the patient has been discharged from the in-patient hospital setting in the attempt to improve physical function.

Aim:
To conduct a scoping study to identify what is known from the existing scientific literature about the effectiveness of rehabilitation before and/or after a knee or hip replacement. This will help to position our current New Zealand study findings within the wider research literature.

Method:
I adopted a five-stage methodological framework to address my aim for this project.

The first step was to clearly identify my research question (see aim above). The next step in the framework was to identify relevant studies and reviews suitable to answer my central research question. I searched for scientific literature in the most relevant electronic databases including: EMBASE, MEDLINE, Pubmed, Cinhahl and Web of Science.

My initial search strategy was developed using my research question, keywords and an adaptation of the search terms used by a previously published systematic review by Gill et al (2013). Search terms were further refined and search limits were applied to reduce irrelevant findings.

Step three was the selection of studies to be included in the scoping review. A developed inclusion and exclusion criteria, based on the specifics of my research question, helped eliminate and further reduce the number of studies and determine their relevance. Studies involving children, animals and TJR nonspecific to OA or hip or knee joints were excluded. Because there are many systematic reviews reviewing the literature up until 2012, we chose to focus on studies published since 2013. One researcher selected study titles and abstracts to review against the inclusion criteria. Two researchers then reviewed the selected abstracts and obtained full study articles for relevant studies where the final decision on included studies was made.

Step four in the framework was to chart the data using key information from each of the included studies. The research findings were then collated and summarised into a scoping review report.

Results:
A total of 738 studies were screened for relevance based on their title. 670 studies were then excluded when applied to the inclusion and exclusion criteria as they were non-OA specific, involved other joints, didn't trial an intervention and/or measured irrelevant outcomes. 68 additional papers were excluded. A final 22 studies were selected and included in the scoping study. All patients were receiving or had received TJR of the hip or knee due to end stage OA. Most studies assessed TKR patients (n=15), while fewer assessed THR patients (n=4) and 3 included both THR and TKR patients. All studies assessed an exercise rehabilitation intervention, although considered different components and programmes.

The results of most studies did not find a between group difference meaning majority concluded that the intervention added no additional benefits over a usual, standardised protocol of care. However programmes that were led by a physiotherapist rather than unsupervised (i.e. where the patient was given exercises to do at home by themselves with no follow up) appeared more effective overall.

Conclusion:
Rehabilitation appears helpful in improving outcomes post-operatively. In the studies I reviewed patients in both control and treatment intervention groups improved which is consistent with the existing literature that exercise-based rehabilitation can improve physical function, quality of life and reduce pain.

Pre-operative education also appears helpful and may accelerate recovery after surgery. Studies included in my review provided additional evidence to support the value of a physiotherapist directing and overseeing a patient's rehabilitation. This suggests that the actual components of a programme may be less important, rather the relationship and trust between the physiotherapist and patient may be the essential ingredient. There is research

in other health conditions that discusses the importance of the therapy alliance between the patient and their health care provider, showing that this can lead to better health outcomes.